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Navy Inventor Presses War for New Keyboard To Speed Typewriting

Old One Designed to Impede Operator, He Says; Inertia Of Schools Is Big Obstacle

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CHICAGO—A minor revolution is brewing in a few Government bureaus throughout the country which may be of far-reaching importance to business offices everywhere.

The movement, under the leadership of Cmdr. August Dvorak, of the Navy Department, seeks to change the standard typewriter keyboard, which has successfully resisted modification since its invention by Christopher Latham Sholes in 1873.

Making typing faster and less fatiguing was one of Commander Dvorak's enthusiasms long before the war, when he was director of research at the University of Washington. After Pearl Harbor, when the nation suddenly found out that there weren't enough skilled stenographers to go around, he got a hearing in government circles.

Girls by the thousand descended on Washington for government jobs. Their only qualification seemed that they could identify a typewriter when they saw one. The average typing speed was found to be around 30 words a minute, with net scores (gross words per minute minus errors multiplied by 10) of zero fairly common.

It was too late to do any mass innovating, because of the rush of war production. However, Commander Dvorak, who had developed a new keyboard under a Carnegie Foundation grant before the war, was allowed to train a group of 14 average typists as an experiment.

Novices Pay Back Training Costs

After a month of four-hour daily sessions the girls had increased their production 74%, with accuracy improving 68%. Within 10 days after completion of the program, their increased output repaid the cost of retraining. In four months their higher efficiency paid a profit of \$6,718, figuring their salaries at the government rate of \$1,750 a year.

Commander Dvorak's outstanding protege is Lenore Fenton, who types at 180 words a minute, compared with the accepted world's record of 152 words a minute on a standard typewriter. In the course of her day's employment at the Navy Department, Miss Fenton once typed 150 300-word manuscript pages, using three carbons, in eight hours, then went out dancing in the evening.

With the Government's wartime budget expected to be cut back to around \$25 billion for a year in peace, it is no secret that Budget Director Harold Smith is keeping close tab on everything that could possibly lower office expenses. Already hundreds of girls have been let out, but still more economy is needed.

For this reason, the new keyboard, and special training programs in its use, are expected to be tried out in many Government offices this year. Col. H. A. Montgomery, chief of Army Engineers for the Great Lakes Division, last week received permission to install the program in Chicago. If the experiment works out there, other Government offices can be expected to follow suit.

The question at once arises: If this method is so superior, why does business in general stick to the old methods?

Typing Schools Averse to Change

Mainly, the answer is that the schools teaching typing can't afford to scrap their investment in textbooks and their years of teacher training, and spend the \$15 or \$25 per machine it would cost to alter their practice machines to take the Dvorak letter arrangement.

Also, skilled stenographers would get only a small return from the time they spent learning the Dvorak keyboard, its inventor concedes. Eighty words a minute is about the critical speed. If a typist can do that many, it isn't worth her while to convert from Sholes to Dvorak. Her increase in speed won't pay for the time she loses being retrained.

Companies that make typewriters are neutral. They would be just as happy to place the 42 keys in the Dvorak pattern as in any other, only they are not going to do it until the schools switch over. E. C. Faustmann, president of the Royal Typewriter Co., while he doesn't endorse every claim Commander Dvorak makes, says the new keyboard is distinctly easier to learn for someone who never sat down to a typewriter before, and more efficient for any typist.

The effort to make the quick brown fox jump over the lazy dog quicker and with fewer stumbles stems from a study made to find out why typists make so many errors.

Professor Dvorak, as he then was, found

that the fault was in the typewriter and not the girl. His study showed:

The standard keyboard overloads the commonly weaker left hand.

The standard keyboard requires the fingers to execute an excessive amount of jumping back and forth from row to row.

Too little typing (32%) is done on the home or guide row, the middle one of the three lettered rows. Too much is done on the upper (52%) and lower (16%) rows.

Certain fingers are overworked, and not enough work is assigned to others.

In 1873 when Sholes designed and Remington Arms Co. put on the market the first workable typewriter, the type bars struck the platen on the underside and dropped back into place.

Keyboard Intended to Be Slow

Sholes planned his keyboard in the most awkward way for speed typing. He had a reason. The action of his machine was so sluggish that to avoid the clashing of typebars being struck in succession he put the letters most frequently used together as far apart as he could. Yet with one change, moving the "m" from the space now occupied by the semicolon, that keyboard is the standard one of today.

Commander Dvorak tried out over 250 variations of the 42-key board before he came up with one that places all the important keys on the home row, and puts more of the work on the right hand, with each finger getting its proportionate share of work.

Initial training on the keyboard is unquestionably easier and faster than on the Sholes' type. For instance, using the simplified keyboard, seventh and eighth grade children at the University of Chicago laboratory school achieve better typing performance in 30 weeks than are being secured by high school and business college students in a full school year. High school students in Tacoma, Washington, after one year (or 180 hours of instruction on the keyboard) reach an average of 48 net words a minute, while the third year average on a standard machine is only 47.

On the streamlined keyboard, 70% of the words commonly used are written on the home row. Vowels are all at the left. Consonants are so arranged that right and left hands alternate their strokes. Finger motions from row to row are reduced by more than 90%.